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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/068,957  | 02/11/2002  | Takaaki Ono          | 111932              | 2382             |
| 25944   | 7590        | 02/18/2004           | EXAMINER            |                  |
| OLIFF & BERRIDGE, PLC<br>P.O. BOX 19928<br>ALEXANDRIA, VA 22320 |             |                      | KRUEER, KEVIN R     |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 1773                |                  |

DATE MAILED: 02/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/068,957

Applicant(s)

ONO ET AL.

Examiner

Kevin R Kruer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7,9 and 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5 and 7 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 17, 2003 has been entered.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

3. The drawings filed February 11, 2002 are acceptable.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machida et al (US 4,806,706) in view of Nagashima (US 4,302,501).

Machida teaches a printed wiring board comprising an insulating base plate (1), a circuit pattern formed of electrically conductive copper film (2) laminated directly on one

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surface of the insulated base plate, a solder resist layer (6) coated on the surface of the copper film, an another solder resist layer (7) coated on the other surface of the insulated base plate opposite the copper film (see Figure 1 and "Background of the Invention"). The solder resists layers (6 and 7) may comprise any of the epoxy acrylate compositions disclosed in column 2, lines 30+, and are comprised of the same material (col 3, lines 40-43). The solder resist layers cover all surfaces of the circuit pattern except the area wherein an electronic part is to be soldered (col 1, lines 20+). Since portions of the copper foil are not covered with resist so that electronic parts may be soldered thereto, the copper foil taught in Machida is understood to be "adapted to have terminals of electronic components soldered thereon."

Machida does not teach that the insulating base plate should comprise phenolic resin impregnated paper. However, Nagashima teaches a printed circuit board comprising an insulating substrate (abstract). Nagashima teaches that insulating substrates of printed circuit boards generally comprise a number of phenolic resin impregnated kraft paper sheets laminated together (col 1, lines 17+). Such laminates are widely used to prepare printed circuit boards (col 1, lines 28+) and have a number of characteristics suitable for manufacturing printed circuit boards. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize laminates comprising a number of phenolic resin impregnated kraft papers as the insulating substrate taught in Machida. The motivation for doing so is that said laminates have a number of characteristics suitable for manufacturing printed circuit boards.

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6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Machida et al (US 4,806,706) in view of Nagashima (US 4,302,501), as applied to claims 1, 3, and 5 above, and further in view of Huang et al (US 5,062,896). Machida in view of Nagashima is relied upon as above. Specifically, Machida teaches that electronic components should be soldered to a printed wiring board. Machida does not teach that the solder should be lead-free. However, Huang teaches that lead-containing solders are environmentally undesirable in the connection of components to printed circuit boards (col 1, lines 13+). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a lead-free solder to connect the electronic components to the printed wiring board taught in Machida. The motivation for doing so would have been to protect the environment.

***Allowable Subject Matter***

Claims 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 9 requires that the position and configuration of the resists applied on the reverse side of the phenolic resin impregnated paper base match with those of the resists applied on the face side of the phenolic resin impregnated paper base. Machida in view of Nagashima is the closest prior art, but does not teach that the position and configuration of the resist applied on the reverse side of the phenolic resin impregnated paper base should match with those of the resists applied on the face side of said base. To the contrary, Machida teaches that the resists should not be applied to the face side

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of said base at land portions that are to be soldered (col 1, lines 31+). Machida teaches that the side of the base opposite the land portion has soldered applied thereto (see Figure 1). Thus, the "position and configuration" of the resists do not match. Furthermore, the prior art as a whole does not teach or motivate one of ordinary skill in the art to make a single-sided copper-clad laminate wherein the position and configuration of the resists applied on the reverse side of the phenolic resin impregnated paper base match with those of the resists applied on the face side of the phenolic resin impregnated paper base.

Claim 10 requires that the resists applied on the reverse side of the phenolic resin impregnated paper base be applied with a checkered pattern. Machida in view of Nagashima is the closest prior art. Specifically, Machida teaches that the resists may be applied to "cover locally" (col 3, lines 60+) but does not teach that the resist applied on the reverse side of the phenolic resin impregnated paper base should be applied with a checkered pattern. Furthermore, the prior art as a whole does not teach or motivate one of ordinary skill in the art to make a single-sided copper-clad laminate wherein the resists applied on the reverse side of the phenolic resin impregnated paper base is applied with a checkered pattern.

### ***Response to Arguments***

Applicant's arguments filed November 17, 2003 have been fully considered but are moot in view of the new grounds of rejection.

The rejection of claims 1-6 under 35 U.S.C. 103(a) as being unpatentable over Gause et al (US 3,895,198) in view of Voroba (US 3,616,984) has been overcome by

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amendment. Gause does not teach a single-sided paper phenolic resin copper-clad laminate wherein the copper foil is directly laminated to the phenolic resin impregnated base.

The rejection of claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gause et al (US 3,895,198) in view of Voroba (US 3,616,984), as applied to claims 1-6 above, and further in view of Huang et al (US 5,062,896) has been overcome by amendment for the reasons stated above.

The rejection of claims 1-4 under 35 U.S.C. 103(a) as being unpatentable over Nomura (US 4,029,845) in view of Voroba (US 3,616,984) has been overcome by amendment. Nomura does not teach a single-sided paper phenolic resin copper-clad laminate wherein the copper foil is directly laminated to the phenolic resin impregnated base.

The rejection of claims 7 and 8 under 35 U.S.C. 103(a) as being unpatentable over Nomura (US 4,029,845) in view of Voroba (US 3,616,984), as applied to claims 1-4 above, and further in view of Huang et al (US 5,062,896) has been overcome by amendment for the reasons stated above.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin R Kruer whose telephone number is 571-272-1510. The examiner can normally be reached on Monday-Friday, from 8:00a.m. to 4:00p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 571-272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin R. Kruer  
Patent Examiner-Art Unit 1773